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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,849	07/03/2003	Leah Markowitz	TSL-101	7262
22888	7590	10/06/2004	EXAMINER	
BEVER HOFFMAN & HARMS, LLP			MAI, ANH D	
TRI-VALLEY OFFICE			ART UNIT	
1432 CONCANNON BLVD., BLDG. G			PAPER NUMBER	
LIVERMORE, CA 94550			2814	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,849

Applicant(s)

MARKOWITZ ET AL.

Examiner

Anh D. Mai

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/3/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 11, 12 and 14 are objected to because of the following informalities:

Regarding claims 11 and 12, both claims recite: “the reaction chamber platen”.

The correct term should be: --a reaction chamber platen--.

Regarding claim 14, line 1 recites: “the method according to claim 3”.

The correct dependent should be: -- the method according to claim 13--

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ben-Guigui et al. (U.S. Patent No. 5,891,800) of record.

Ben-Guigui teaches a method for forming a transparent inter-metal dielectric as claimed including:

forming a base SiO₂ layer (41);

forming a flowlayer (42) on the base SiO₂ layer (41) by reacting SiH₄ and H₂O₂; and

forming a cap SiO₂ layer (44) on the flowlayer (42),

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wherein forming the flowlayer (42) includes using a shortened H_2O_2 stabilization time in the range of 30 seconds to approximately 150 seconds. (See Figs. 1-3, col. 1-8).

Note that the stabilization time of Ben-Guigui is between 30 to 150 seconds, which encompasses the claimed limitation of 30 seconds to approximately 50 seconds.

With respect to claim 2, the shortened H_2O_2 stabilization time of Ben-Guigui includes 50 seconds.

3. Claims 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuura (U.S. Patent No. 5,985,769).

With respect to claim 9, Matsuura teaches a method for forming a transparent inter-metal dielectric as claimed including:

forming a base SiO_2 layer (3);

forming a flowlayer (4) on the base SiO_2 layer (3) by reacting SiH_4 and H_2O_2 ; and

forming a cap SiO_2 layer (5) on the flowlayer (4),

wherein forming the flowlayer (4) includes using an H_2O_2 deposition pressure in the range of 400 mTorr to approximately 600 mTorr. (See Figs. 1-2).

With respect to claim 10, the H_2O_2 deposition pressure of Matsuura is approximately 500 mTorr (66.65 Pa).

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With respect to claim 11, forming the flowlayer (4) of Matsuura further comprises maintaining the reaction chamber platen (23) at a target value in the range of 0.5 to 3°C.

With respect to claim 12, forming the flowlayer (4) of Matsuura further comprises maintaining the reaction chamber platen (23) at a target value of approximately 1°C.

With respect to claim 13, Matsuura teaches a method for forming a transparent inter-metal dielectric as claimed including:

mounting a substrate (1) on a platen (23) in a reaction chamber (21);

forming a base SiO₂ layer (3) over the substrate (1);

forming a flowlayer (4) on the base SiO₂ layer (3) by reacting SiH₄ and H₂O₂; and

forming a cap SiO₂ layer (5) on the flowlayer (4),

wherein forming the flowlayer (4) includes maintaining the reaction chamber platen (23) at a target value in the range of 0.5 to 3°C. (See Figs. 1-2).

With respect to claim 14, as best understood by the examiner, the target value of Matsuura is approximately 1°C.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ben-Guigui '800 as applied to claims 1 and 2 above, and further in view of Matsuura '769.

With respect to claim 3, Ben-Guigui teaches a method as described in claim 1 above, thus, Ben-Guigui is shown to teach all the features of the claim with the exception of forming the flowlayer at a lower pressure between 400 mTorr to 600 mTorr.

However, Matsuura teaches a method for forming a transparent inter-metal dielectric including: forming a flowlayer (4) comprises using an H_2O_2 at a deposition pressure (of approximately 500 mTorr (66.65 Pa)) which is within the claimed range (400 mTorr to approximately 600 mTorr). (See col. 4, lines 14-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the flowlayer of Ben-Guigui at the pressure as taught by Matsuura to form an uniform inter-metal layer.

With respect to claim 4, forming the flowlayer in view of Matsuura comprises using an H_2O_2 deposition pressure of approximately 500 mTorr.

With respect to claim 5, forming the flowlayer in view of Matsuura further comprises maintaining the reaction chamber platen at a target value the range of 0.5 to 3°C.

With respect to claim 6, forming the flowlayer in view of Matsuura comprises maintaining the reaction chamber platen at a target value of approximately 1°C.

With respect to claim 7, forming the flowlayer in view of Matsuura further comprises maintaining the reaction chamber platen at a target value in the range of 0.5 to 3°C.

With respect to claim 8, forming the flowlayer in view of Matsuura further comprises maintaining the reaction chamber platen at a target value of approximately 1 °C.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anh D. Mai
September 30, 2004

A handwritten signature in black ink, appearing to read 'Anh D. Mai', with a long, sweeping horizontal line extending to the right.